Having now described the invention in detail as required by the patent statutes, those skilled in the art will recognize modifications and substitutions to the specific embodiments disclosed herein. Such modifications are within the scope and intent of the present invention as defined in the following claims.

WHAT IS CLAIMED IS:

1. A method for data transmission from an image array comprising the steps of:

providing an X by Y array of detector elements;

identifying a predetermined feature;

examining the array elements for presence of the predetermined feature;

defining a pixel set within a fovea associated with one or more elements of the array in which the predetermined feature is present;

agglomerating elements outside of the fovea to create super-pixels;

reading a data value from each of the foveal pixels and super-pixels in the array; and,

analyzing the data values for temporal data content.

2. A method as defined in claim 1 wherein the step of agglomerating elements comprises the steps of:

defining a charge sharing scheme;

implementing the charge sharing scheme based on presence of the predetermined feature; and,

sharing charge between adjacent elements pursuant to the scheme.

3. A method as defined in claim 2 wherein implementing the charge sharing scheme comprises the steps of:

determining a first region of first super-pixel sizes adjacent the fovea; and,

determining a second region of second super-pixel sizes adjacent the first region.

4. A method as defined in claim 2 wherein the step of analyzing comprises the steps of:

determining a parameter change in the data values; and,

redefining the agglomeration scheme based on the parameter change.

5. A method as defined in claim 4 wherein the parameter is brightness and the step of analyzing further comprises the step of redefining the fovea in response to the change in brightness.

6. A method as defined in claim 1 further comprising the steps of :

recording the pixel agglomeration locations; and,

recreating pixel configuration data in the agglomerated condition.

7. A method as defined in claim 1 further comprising the steps of:

providing a plurality of additional arrays circumferentially spaced around the X by Y array;

measuring the response of each circumferential array;

modifying the definition of the foveal pixel set in response to the measured responses of the circumferential arrays.

8. A method as defined in claim 7 wherein the plurality of additional arrays comprises 12 arrays spaced circumferentially at substantially equal angles around the X by Y array and the step of measuring the response comprises the steps of:

detecting the motion of a focused element of background image from one pixel to another pixel separated by a predefined distance in a circumferential array;

calculating velocity based on the motion detection;

spatially integrating calculated velocities for adjacent elements of the circumferential array; and,

providing the integrated signal for modifying the foveal pixel set definition.

9. A method as defined in claim 8 wherein the step of detecting comprises the steps of:

measuring propagation of an edge by adjacent pixels in the circumferential array; and

synchronizing the measured edges.

10. An integrated on-chip variable acuity imager array comprising:

a plurality of image elements arranged in an X by Y array, each of the elements including a detector and a charge integration capacitor;

means for connecting the charge integration capacitor of each element to the charge integration capacitor of a left adjacent element responsive to a first control signal;

means for connecting the charge integration capacitor of each element to the charge integration capacitor of an upper adjacent element responsive to a second control signal;

means for selectively generating the first control signal for each element in a dynamically defined super-pixel;

means for selectively generating the second control signal for each element in the dynamically defined super-pixel;

means for dynamically defining at least one super-pixel;

means for reading the charge integration capacitor of each element not receiving a control signal and for reading the charge integration capacitor of a master element in each super-pixel, the master element being the leftmost and uppermost element in the super pixel.

11. An integrated on-chip variable acuity imager array as defined in claim 10 wherein the means for selectively generating the first and second control signals comprise unit cell static RAMs and the means for dynamically defining the at least one super-pixel comprises:

means for identifying a predetermined feature;

means for defining a foveal pixel set of elements responsive to the identifying means;

means for defining at least one super-pixel of elements outside the foveal pixel set;

means for storing an indicator for the first control signal in the associated RAM for each element in the super-pixel which is not leftmost; and

means for storing an indicator for the second control signal in the associated RAM for each element in the super-pixel which is not uppermost.

12. An integrated on-chip variable acuity imager array as defined in claim 11 further comprising:

a plurality of motion sensing arrays circumferentially spaced around the X by Y array, each motion sensing array having a plurality of elements substantially tangentially oriented to the X by Y array;

an edge detector associated with each element, each edge detector connected to adjacent edge detectors for elements of the motion sensing array;

means for synchronizing a signal received connected to each edge detector, the synchronizing means connected for transmission of the signal;

means for computing velocity associated with each edge detector based on the signal received from the synchronizing means for the associated edge detector and the synchronizing means for each adjacent edge detector;

means for connecting the velocity computing means for spatial integration of the computed velocities to provide a velocity vector; and,

wherein the means for defining the foveal pixel set is responsive to the velocity vector.

13. An integrated on-chip variable acuity imager array as defined in claim 12 wherein the plurality of motion arrays comprises 12 motion arrays spaced at substantially equal angles around the circumference of the X by Y array.

14. An integrated on-chip variable acuity imager array as defined in claim 11 further comprising means for storing the RAM contents for the elements of the array in conjunction with storage of an output for each element from the sample and hold reading means.